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(56) Documents Cited
GB 1443262 A GB 1296609 A GB 1277978 A
GB 1097389 A GB 0870483 A

(58) Field of Search
UK CL (Edition M) B8A ACE
INT CL⁵ B65G 47/22 47/26 47/28

(54) Conveyor to space articles equally

(57) A chain conveyor 1 moves a series of support rollers 4/5 in the direction of arrow 9. Rollers 5 are caused to rotate by interaction with guide 7, this rotation causing packages 8 to move to free-wheeling support rollers 4, whilst conveying takes place. Provides equi-spaced packages. Drive for rollers 5 may be rubber/friction, or tooth and rack.

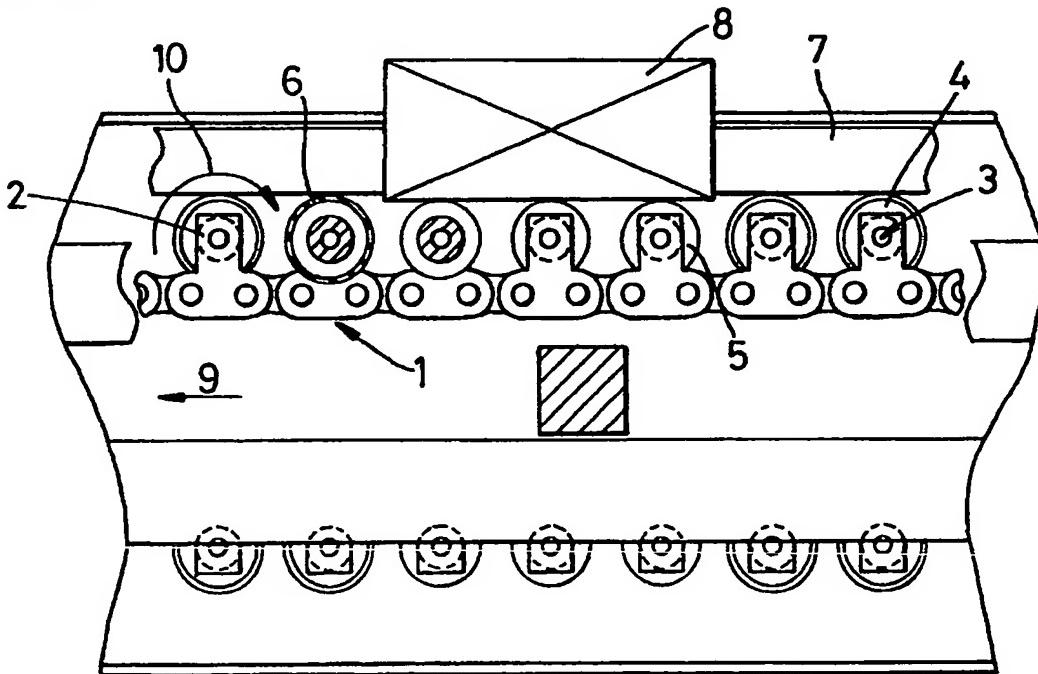


Fig. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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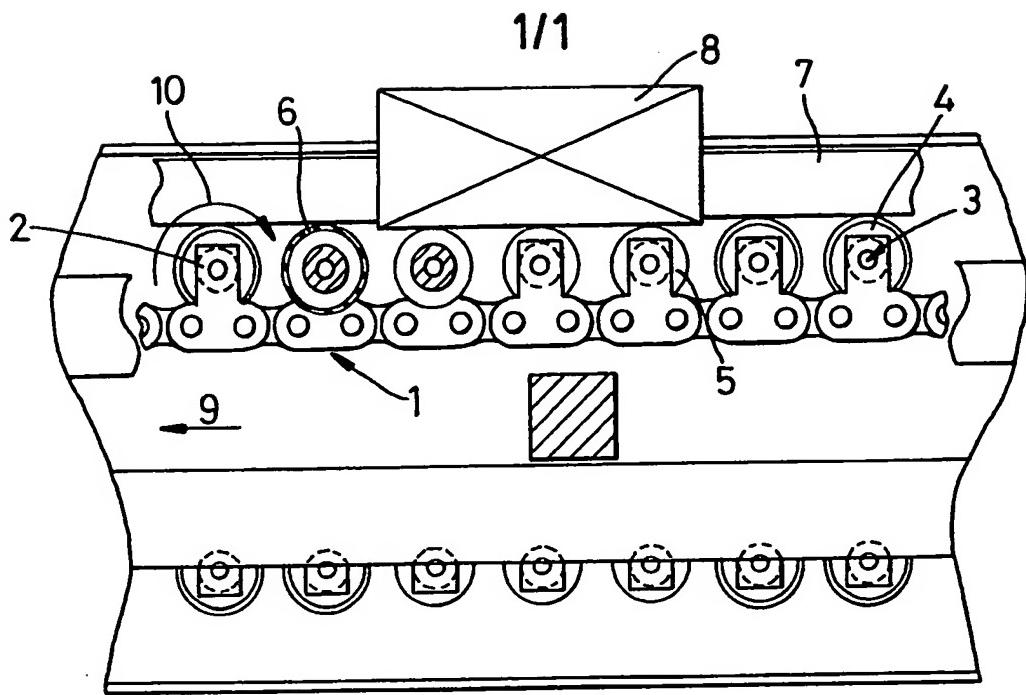


Fig. 1

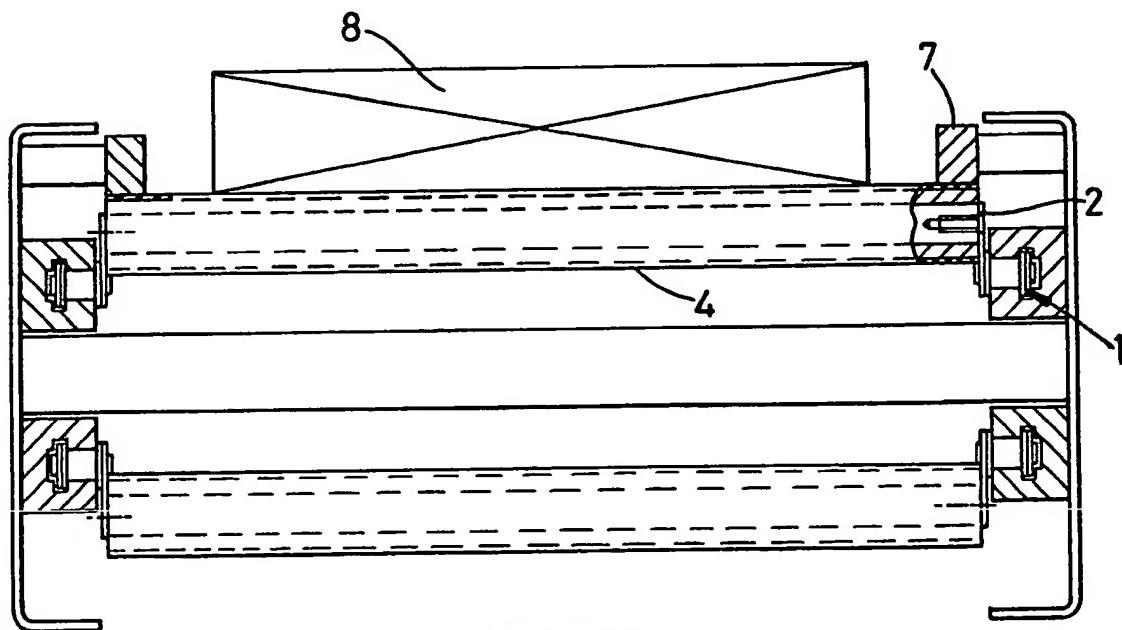


Fig. 2

Improvements relating to Conveyor Mechanisms

When packages of various sorts are moved on conveyor systems it is often a requirement that these items should be spaced fairly regularly along the conveyor so that they are delivered to a destination with regular timing. It is an object of this invention to provide a conveyor mechanism which aims to move packages dropped onto the conveyor to predesignated areas of the conveyor.

According to the present invention there is provided a chain or belt conveyor with projections out of the plane of the chain or belt providing carrying areas for a package to be conveyed, the carrying areas of regularly spaced projections or groups of projections being formed as drive rollers which will be rotated by interaction with elongated guides as the chain or belt is driven.

When a package is dropped onto this type of conveyor any packages falling onto the region formed by the drive rollers will be moved to an adjacent region as the drive rollers rotate due to their interaction with the guides. The packages will then come to rest in these adjacent regions and by this means a desired spacing of packages delivered to the conveyor can be achieved. Ideally, the intermediate carrying areas between the drive rollers will be formed as support rollers having a smaller diameter than the drive rollers so that they do not react with the elongated guides. Thus, as a package is delivered by the rotating drive rollers to the intermediate region it will

not experience any resistance as the support rollers will rotate as they react with the package. These support rollers will not, however, be driven as they are not in contact with the guides.

5 The rollers could be interlinked by pivot plates connected between the roller spindles. In a preferred arrangement, however, the rollers will be carried by bosses which project out of the drive line of a chain or belt and which provide bearings for the rollers.

10 Preferably the drive rollers will have a covering of rubber or other resilient material.

15 Ideally, the guides will be positioned to act in a plane forming a tangent to a consecutive number of drive rollers to one side or the other of the array of drive rollers. The guides can also act as side guides to limit the extent of movement of a package across the conveyor.

20 The invention may be performed in various ways and a preferred embodiment will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a side view of a part of a chain conveyor mechanism of this invention; and

Figure 2 is a front view of the mechanism shown in Figure 1.

25 Each of the links of a chain drive 1 carries a projecting boss 2 which provides a bearing 3 for either a drive roller 4 or a support roller 5. The drive rollers have a rubber covering 6 which interacts with static guides 7 at

the two sides of the conveyor system. The support rollers 5 have a smaller radius than the drive rollers 4 (in this instance by omission of the rubber covering 6).

In use, when a carton 8 (or other package) is delivered 5 to the conveyor, if it lands on one or more of the drive rollers 5 these rollers, because they are rotating, will drive the carton towards a region where only support rollers 5 are provided. By this means successive cartons 8 will be positioned on sets of support rollers 5 so that a required 10 spacing of the cartons along the conveyor will be achieved. With the upper run of the chain 1 moving in the direction indicated by the arrow 9, the drive rollers 4 will rotate in the direction shown by the arrow 10 to move the carton to the right (as shown in Figure 1). If the static guide was 15 positioned below the upper run of the chain 1 so as to react with the underside of the line of rollers 4, then these rollers would be driven in the opposite direction so as to move the carton to its delivery position in the same direction as the direction of travel 9 of the chain.

Whilst the guides 7 have been shown as plates with a plain edge to react with the rollers, the guides may take other forms. For example, the rollers could have circumferential teeth at their ends to react with a toothed rack forming the guide or with a guide in the form of a fixed 25 length of conveyor chain.

CLAIMS

1. A chain or belt conveyor with projections out of the plane of the chain or belt providing carrying areas for a package to be conveyed, the carrying areas of regularly spaced projections or groups of projections being formed as drive rollers which will be rotated by interaction with elongated guides as the chain or belt is driven.
5
2. A conveyor as claimed in Claim 1, wherein intermediate carrying areas between said drive rollers are formed as support rollers having a smaller diameter than the drive rollers so that they do not react with the elongated guides.
10
3. A conveyor as claimed in Claim 1 or Claim 2, wherein the drive rollers have a covering of rubber or other resilient material.
15
4. A conveyor as claimed in any one of Claims 1 to 3, wherein the rollers are carried by bosses which project out of the drive line of a chain or belt and which provide bearings for the rollers.
5. A conveyor as claimed in any one of Claims 1 to 4, wherein the rollers have circumferential teeth at their ends to react with a toothed rack forming the guide or with a guide in the form of a fixed length of conveyor chain.
20
6. A conveyor as claimed in any one of Claims 1 to 5, wherein the guides are positioned to act in a plane forming a tangent to a consecutive number of drive rollers to one side or the other of the array of drive rollers.
25

7. A conveyor as claimed in any one of Claims 1 to 6,
wherein the guides also act as side guides to limit the
extent of movement of a package across the conveyor.
8. A conveyor as substantially as herein described
5 with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

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Application number
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Relevant Technical Fields

- (i) UK Cl (Ed.M) B8A (ACE)
 (ii) Int Cl (Ed.5) B65G 47/22,/26,/28

Search Examiner
 R D CAVILL

Date of completion of Search
 26 JULY 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Documents considered relevant following a search in respect of Claims :-
 1 TO 8

Categories of documents

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|----|---|----|---|
| X: | Document indicating lack of novelty or of inventive step. | P: | Document published on or after the declared priority date but before the filing date of the present application. |
| Y: | Document indicating lack of inventive step if combined with one or more other documents of the same category. | E: | Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| A: | Document indicating technological background and/or state of the art. | &: | Member of the same patent family; corresponding document. |

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 1443262	(FMC) see Figures 4 to 7 and note guide 68 and see page 3 lines 31-34	1,3 to 7
X	GB 1296609	(GIDDINGS) see whole document	1,4
X	GB 1277978	(JOHNSON) see whole document and note guides 50 eg. in Figure 2	1,6
X	GB 1097389	(LERNER) see figure	1
X	GB 870483	(TORONTO) see Figures 2,4,5	1,4,6,7

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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